



02/01/2012 03:32 PM

Hide Details
From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Barnitz (cbarnitz@utah.gov)" <cbarnitz@utah.gov>

History: This message has been replied to.

#### 7 Attachments









Weekly Report 01-23 to 01-27-12.pdf Third West Weekly Log 2011-04.pdf 228373-1.pdf 228454-1.pdf







228518-1.pdf 228612-1.pdf 228714-1.pdf

Joyce & Craig,

Attached are the reports for the week of January 23, 2012.

All air monitoring results came back negative, except the positive hits of chrysotile on Thursday and Friday last week.

I should have an incident report to you by the end of the week.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
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Rocky Mountain Power - Major Projects
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### 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

		DAILY CHECKLIST
OATE	:	<u>01/23/11</u>
Ge	<u>neral</u>	
		area Health and Safety Inspection
NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
		activities for the day
NA		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA		Site hazard and safety instruction for all first time employees, contractors or visitors
NA		Complete Employee Meeting Record Form B (where applicable)
NA	<b>L</b>	Document required Respirator Training completion with Form H
NA		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NÀ		Confirm return of waste material manifest documents for each load with site manager.
NΑ	Compl	ete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	$\square$	Exclusion zone operations are practiced as instructed.
	_	Decontamination unit is working properly.
		✓ Workers are using decontamination unit as instructed.
		✓ Workers use personal protective equipment properly.
		Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation.
	•	Observe control measures for dust and fugitive materials i.e. watering excavation
_		sites and track out prevention.
☑		Review sign-in/sign-out log throughout and at the end of the workday.
. 🗹		Secure the site at the end of the workday
Sai	mpling	
NA	Soil C	onfirmation sampling for any newly excavated areas
<u> </u>		Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
NA	<b>\</b>	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	<b>\</b>	Digitally photograph each sample location and at any place field sampling personnel





		Electronically file photo files into the on-site database
		Complete Field Documentation
	$\square$	Field Sample Data Sheets (FSDS)
	$\square$	Logbook
	$\square$	On-site computer database
		Label each sample media with a unique number
$\overline{\mathbf{V}}$		Seal sample(s) in zip lock plastic bags
		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
☑		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
☑		Review and disseminate sample results as received from the laboratories to Project  Manager and other appropriate managers and employees
$\square$	-	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 01/23/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: _Justin Kargis	Title:

Standard	Title	☐ In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x	1.5		4
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	×
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.		-	х	*
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х		z.	
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х		*	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			-
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	*
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
1926.451 (a)	Scaffold planking shall extend over their end support not less than 6 inches and not more	x			
(14) 1926.602 (a)	than 12 inches.  Bi-directional earth moving equipment shall	x			
(9)	have audible alarms.				4
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.		(4.)	х	* _
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new			х	
(2)	one is prepared.				*

Exclusion zone active and observed once earth work began.

High winds has blown EZ fencing down over the weekend. Newman immediately proceeded to reset all fencing and were suited up while working on it.

Newman backfilled the switchgear building throughout the day. They also excavated an area adjacent to the east fence in the north arm of the yard for the  $46~\mathrm{kV}$  vaults.

Soil was very wet due to precipitation.

CVE line crew was working in the energized section of the yard.





### 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

#### **DAILY CHECKLIST**

DATE	:	01/24/11
<u>Ge</u>	<u>neral</u>	
		rea Health and Safety Inspection
NA	<b>L</b>	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
NA	<b>\</b>	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA NA	<b>\</b>	Site hazard and safety instruction for all first time employees, contractors or visitors Complete Employee Meeting Record Form B (where applicable)
NA	<b>\</b>	Document required Respirator Training completion with Form H
NA		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA		Confirm return of waste material manifest documents for each load with site manager.
NA		ete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	$\square$	Exclusion zone operations are practiced as instructed.
		Decontamination unit is working properly.
	•	✓ Workers are using decontamination unit as instructed.
		Workers use personal protective equipment properly.
☑		Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
<b>4</b>		Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
<u>Sa</u>	mpling	
NA	Soil Co	onfirmation sampling for any newly excavated areas
Ø		Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
NA	A	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	A	Digitally photograph each sample location and at any place field sampling personnel





Ø		Electronically file photo files into the on-site database
☑		Complete Field Documentation
	Q	Field Sample Data Sheets (FSDS)
	Q	Logbook
		On-site computer database
$\checkmark$		Label each sample media with a unique number
		Seal sample(s) in zip lock plastic bags
Ø		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø		Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
Ā		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 01/24/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	3.
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.	-		х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x		W.	
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.		*	x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	4		x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	· .

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	4
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x		¥	
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x	*		
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.		٠	х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	*

Standard	Title	☐ In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
Standard					Dute
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone active and observed once earth work began.

Newman worked with Old Castle precast to place a vault in the north arm of the yard near the gate. The While the EZ was closed off, the vault hole excavation exposed native soil which the workers had to work around. The Old Castle worker had to operate the boom in the vicinity of the hole. This was discussed between R&R and RMP prior to placing the vault.

Newman continued earthwork for 46kV vaults. This excavation between the control building and the fence in the north arm of the yard sloughed and created a hole outside the yard boundary.

CVE and Newman used temporary fencing and barricades to section off this area to prevent people from falling in the gap between the fence and parking lot asphalt.





### 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

	DAILY CHECKLIST
DATE:	01/25/11
<u>General</u>	
	area Health and Safety Inspection
NA WOIK	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1471	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
1111	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
	contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Comp	lete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
。NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
$\square$	Exclusion zone operations are practiced as instructed.
_	Decontamination unit is working properly.
	✓ Workers are using decontamination unit as instructed.
	Workers use personal protective equipment properly.
•	Workers also personal protective equipment property.
Ø	Set air samples at cardinal compass points around exclusion zone. Check
<del>_</del>	throughout the day to ensure proper operation.
•	Observe control measures for dust and fugitive materials i.e. watering excavation
	sites and track out prevention.
$\overline{\mathbf{Z}}$	Review sign-in/sign-out log throughout and at the end of the workday.
$\overline{\square}$	Secure the site at the end of the workday
<u>Sampling</u>	· ·
NA Soil C	onfirmation sampling for any newly excavated areas
	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal
NA `	Digitally photograph each sample location and at any place field sampling personnel
χ.	determined necessary





		Electronically file photo files into the on-site database
		Complete Field Documentation
		Field Sample Data Sheets (FSDS)
	$\square$	Logbook
		On-site computer database
		Label each sample media with a unique number
		Seal sample(s) in zip lock plastic bags
		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
☑		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
		Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
$\square$		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 01/25/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: <u>Justin Kargis</u>	Title:

		] In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
Standard 1926.59	Title  Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	Date
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	*
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	O N/A	Corrective Action Taken and Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	ē		x	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
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1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	v		x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

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Standard	Title				Date
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1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	s) +
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х		ě	,
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x	-		
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone active and observed once earthwork began.

3 Miller and 1 Newman truck washed out before 9:00. Circuit breakers were delivered and two were placed on pads on both sides of the decon unit.

CVE civil crew poured east 1/3 section of the switchgear floor.

3 Miller trucks and 1 Newman truck washed out during the afternoon.

EZ protocols continue to be followed at an acceptable level.

The owner of Artistic Printing came to take photos of the corner of their building that was exposed for placement of the vault in the north arm of the yard. He expressed concerns about foundation cracking and structure strain resulting from removal of fill near the northeast corner of the building.





# 3<sup>rd</sup> West Substation Remediation Project HEALTH SAFETY MANAGER (HSM)

#### DAILY CHECKLIST

	DAILY CHECKLIST
DATE:	01/26/11
_	
Genera	
	rk area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day .
NA .	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
• •• •	contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Coi	nplete all CSHASP Forms (for applicable activities planned for that day)
NA	
	Exclusion zone operations are practiced as instructed.
_	☐ Decontamination unit is working properly.
	✓ Workers are using decontamination unit as instructed.
	✓ Workers use personal protective equipment properly.
	,
☑	Set air samples at cardinal compass points around exclusion zone. Check
· <del>-</del>	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation
	sites and track out prevention.
$\square$	Review sign-in/sign-out log throughout and at the end of the workday.
<u> </u>	Secure the site at the end of the workday
_	Secure the site at the one or the working
<u>Sampl</u>	ing
NA Soi	l Confirmation sampling for any newly excavated areas
	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
۳	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
1477	removal
NA	Digitally photograph each sample location and at any place field sampling personnel
1473	determined necessary





		Electronically file photo files into the on-site database
☑		Complete Field Documentation
	$\overline{\mathbf{Q}}$	Field Sample Data Sheets (FSDS)
		Logbook
	Ø	On-site computer database
		Label each sample media with a unique number
		Seal sample(s) in zip lock plastic bags
☑		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
☑		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
☑		Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 01/26/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.		DS.	x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.	17		x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	æ
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	,
1926.403 (b)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			,
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х		F	
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.	1		х	

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х		r	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	a

Exclusion zone active and observed once earthwork began.

10 dump truck loads were washed out throughout the day.

Work around the vault near the north gate required tasks near exposed native soil. The exclusion zone was altered to allow for entry into this area and CVE workers did not suit up to work in this location. CVE civil crew poured flowable fill and used to plastic sheeting to cover most of the exposed banks of

native dirt.

Had a meeting with a structural engineering consultant to address concerns from Artistic Printing owner about possible damage to their building. The consultant indicated that it was ok to move ahead with flowable fill around the vault.

CVE poured west 1/3 of the switchgear foundation.

CVE line crew continued to tear down structural steel and framework in west section of yard.





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

#### DAILY CHECKLIST

	DAIL I CHECKLIST
DATE:	01/27/11
General NA Work	area Health and Safety Inspection '
NA WOIK	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1 12 E	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Comp	lete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA.	Site-Specific Training Record Form C
· NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
$\square$	Exclusion zone operations are practiced as instructed.
	Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	Workers use personal protective equipment properly.
☑	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
<b>☑</b>	Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
Sampling	
	•
NA Soil C ☑	Sonfirmation sampling for any newly excavated areas  Stationary Air Monitoring during contaminated soil removal around the perimeter of the
NI A	exclusion zone  Research Breathing Zone Manitoring on marganual conducting contaminated dust and soil
. NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





Electronically file photo files into the on-site database
Complete Field Documentation
Field Sample Data Sheets (FSDS)
Logbook
On-site computer database
Label each sample media with a unique number
Seal sample(s) in zip lock plastic bags
Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 01/27/12			
Location: 3 <sup>rd</sup> West, 1 <sup>st</sup> South, SLC	Job Number:			
Survey Conducted By:	Title:			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	O N/A	Corrective Action Taken and Date
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.		jų.	х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.		191	x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

Standard	Title	In Compliance	Out of Compliance	D/A	Corrective Action Taken and Date
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			х	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.		×	x	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			,
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			· *
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.	,		х	

#### Comments:

Exclusion zone active and observed once earthwork began.

18 trucks washed out throughout the day. All hauled a mix of concrete and contaminated soil. Newman contracted with Geary construction for use of 4 truck/pup rigs for hauling.

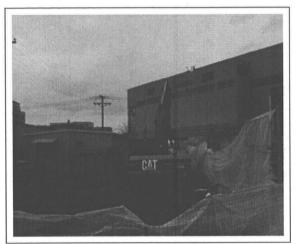
Newman placed shoring equipment in the hole for the 46kV vaults east of the new control building. More of this hole has soughed out under the parking lot, continuing the need to barricade 4-5 parking spots and fencing off the gap between the asphalt and yard fence. This is an area of concern due to people either falling in the hole or entering the yard through the gap.



РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR
DRAWN BY: JMK	DATE 01/23/12	FILE:

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

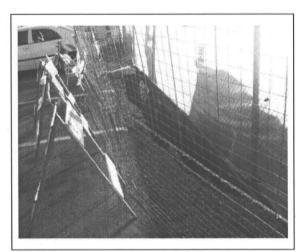


PHOTO 4

# R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 01/24/12	FILE:	

## SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

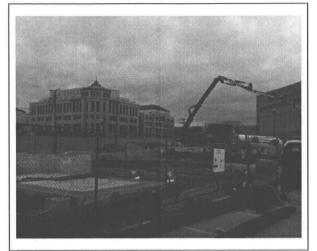
R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY: REVIEWED BY: SCALE: DCR DRAWN BY: DATE FILE: **JMK** 01/25/12

# SITE PHOTOGRAPHS





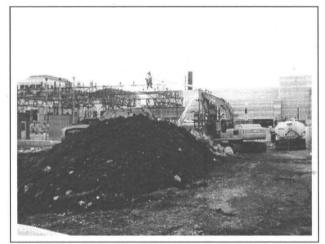
РНОТО 1



**PHOTO 2** 



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

REVIEWED BY: DESIGNED BY: SCALE: DCR DRAWN BY: DATE FILE: **JMK** 01/26/12

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

# R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 01/26/12	FILE:	

# SITE PHOTOGRAPHS

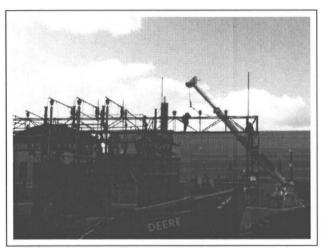




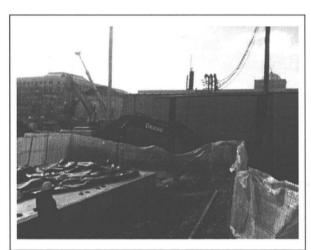
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY: SCALE:		REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 01/27/12	FILE:	

## SITE PHOTOGRAPHS



### PACIFICORP OPERATIONS - Field Construction Representative Dally Log PROJECT NAME: Third West Sub - Rebuild DATE: Monday, January 23, 2012 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric PO & Work Order NO.: Crew Start Time: 7:00 Crew Stop Time: 17:00 Tot Hrs mns: FCR Start Time: 6:50 17:10 FCR Stop Time: Tot Hrs mns: 10:20 Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy - 35 degrees in AM, Snow and 32 degrees in PM DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. The wind took down some of the fence around the EZ. Newman spent time reconstructing the EZ fence. Newman backfilled the switchgear foundation and the north side of the switchgear, over the top of the FTB poured on Friday. Newman aiso completed exposing the 46 kV cables and the CVE electrical crew cut, phased, and marked the cables. The CVE line crew grounded the 46 kV cables at the breaker positions. The CVE fab crew grouted the switchgear foundation, placed rebar in the west section of the floor, and propped the embed anchors for the floor slabs. CVE Fab Crew = 7, Newman = 10, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Barry Nielson 0650 Dispatcher logout, name and time: Ken Barto 1710 DISCREPANCIES: **IMMEDIATE CORRECTIVE ACTION TAKEN:** 11/30 - Identified an additional retaining wall that is below grade and does not show on the Will excavate to determine dimensions. Sent email and pictures to Roger F to confinn that this conflict is 12/14 - Communications battery rack extends into the northeast doorway. Capital Electric indicates that they were told to proceed with the install by Barry Andersor acceptable to RMP. Under evaluation by Comm Group 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't fi<u>nd th</u>em. Will try again. Actual deoth will be much deeper than design of new bank **DELAYS OR LOST TIME ENCOUNTERED:** EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew tmck, boom truck. Newman: portable wash-down structure, trachoe, bobcat, mini-ex, power washer, water truck, compactor (2), backhoe.

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson
Field Construction Representative

PROJECT NAME:	Third West Sub	- Rebuild	DATE:	Tuesday, January 24, 201					
PO & Work Order NO. :	3000078050 / 1	0035803	MAIN CONTR	ACTOR:	Cache Valley	Electric			
Crew Start Time: 7	:00	Crew Stop Time:	16:30		Tot Hrs mns:	9:30			
FCR Start Time: 6	:45	FCR Stop Time:	16:55		Tot Hrs mns:	10:10			
Use military time format 00:00	<del>-</del>			· .					
-									
WEATHER CONDITIONS:		Partly Cloudy- 25 deg	rees in AM, 40 c	legrees in	the PM				
DESCRIPTION: (work performed									
R&R set up four monitors. Bill Benson Vault #1. I allowed him to do so. His a surfaces in the future from the excavat Castle delivered and placed Vault #1. the 46 kV cables at the termination striplanning on pouring it on Wednesday, of the excavation for the 46 kV vaults I lot side of the substation fence to keep Fab Crew = 5 , Newman = 9 , R&R =	concern was that he tion activity next to hin Newman excavated Lictures. CVE fab crudings, and covered the sloughed off under people away from the concern that the sloughed of the concern to the concern that the concern the concern that the con	wanted some documents building. Newman column around the 46 kV vaultew placed the rebar and the foundation with visquer the east fence. CVE	tion of the excavati mpleted the work of in the EZ, in prepa I expansion materia een to prevent moi installed a tempor	on in case on the exca ration for real for the swature from ary fence a	there is some issovation for Vault # emoving it. CVE witchgear floor ar accumulating. T	sue that  1 and Old  line crew clind is  he east wall  the parking			
IF WORKING IN ENERGIZED SU Dispatcher login, name and time:	BSTATION: Jim Bowman 0645		· · · · · · · · · · · · · · · · · · ·						
Dispatcher logout, name and time:	Ken Barto 1655								
DISCREPANCIES:	Then barto 1000		IMMEDIATE CO	RRECTIV	E ACTION TA	KEN:			
			<u> </u>		<del></del>				
11/30 - Identified an additional retaining war Demo Plan.	Il that is below grade a	nd does not show on the	Will excayate to dete	rmine dimen	isions.				
12/14 - Communications battery rack exterindicates that they were told to proceed wit 12/15 - Excayated to locate the 46 kV cable didn't find them. Will try again. Actual dep DELAYS OR LOST TIME ENCOL	h the install by Barry Ales exiting the west side the will be much deeper	ndersor of the yard. Dug 8' and	Sent email and pictures to Roger F to confirm that this conflict is acceptable to RMP. Under evaluation by Comm Group Sent e-mail to Roger F.						
EQUIPMENT (working, delivered CVE fab crew: Portable toilet (2), fbrkliff, 1 wash-down structure, trachoe, bobcat, mir	dumpster, office trailer ni-ex, power washer, wa		ackhoe.	rew truck, b		an: portable			
<u> </u>	· · · · · · · · · · · · · · · · · · ·	<del></del>		<del>.</del>					



Russ Johnson

Field Construction Representative

PROJECT NAME:	Thir	d West Sub - Rebuild	DATE: Wednesday, January 25, 20								
PO & Work Order NO. :	300	0078050 / 10035803	MAIN CONT	RACTOR	: Cache Valle	ey Electric					
Crew Start Time:	7:00	Crew Stop Time:	17:05	5	Tot Hrs mns:	10:05					
FCR Start Time:	6:50	FCR Stop Time:	17:55	5	Tot Hrs mns:	11:05					
Use military time format 00:00		TOROLO TIMO		_	-	11.55					
oso miner y anno ronnae osiou											
WEATHER CONDITIONS:	<del></del>	Partly Cloudy, 32 de	grees in AM, 40	degrees ir	the PM						
		eral comments, instructions to out 8 trucks for a total of 116. Newma									
the 4 kV switchgear. CVE line of (CB 144 - S/N H145A21053-20) on the Gadsby line and C phase	rew worked in I / <b>SAP#</b> 3880 I on <b>Tr</b> ansfom Ifloor, and star	rial in the main excavation area insidenthe west yard cutting up cable and 1980 and CB 132 - S/N H145A21053-3 are #1). CVE fab crew completed parted tying rebar for the 46 kV vault flot.	cleaning up. The 204 / SAP# 38808 placement of emb	y also unloa 33) and set t eds for the s	ded two HVB C hree CCVTs (B	B's at the site & C phases ng, poured					
IF WORKING IN ENERGIZE Dispatcher login, name and time	e: <b>M</b> anny	Luhaun 0650									
Dispatcher logout, name and tin	ne: Ken B	arto 1755									
DISCREPANCIES:			IMMEDIATE C	ORRECTI	/E ACTION T/	AKEN:					
11/30 - Identified an additional retain	ning wall that is	below grade and does not show on the	Will excavate to de	termine dime	nsions.						
indicates that they were told to oroc 12/15 - Excavated to locate the 46 i	eed with the ins V cables exiting ual deoth will be	g the west side of the yard. Dug 8' and e much deeper than design of new bank	Sent email and pict acceptable to RMP Sent e-mail to Rog	. Under evalu							
			·								
EQUIPMENT (working, deli	ivered, idle)	:									
CVE fab crew: Portable toilet (2), for	orklift, 1 dumpst	er, office trailer, conex, exclusion zone of wer washer, water tmck, compactor (2), t		, crew truck, t	poom truck. Newn	nan: portable					
OSHA Pacordable Sefety I	naidonta		Panadad	by:	 Time:						
OSHA Recordable Safety I	ncidents:			Reported	υy.	Time:					
	<del></del> ;		<del></del>								



Russ Johnson

PROJECT NAME:	Third West Su	ub - Rebuild	DATE :	Thursd	6, 2012	
PO & Work Order NO. :	3000078050	/ 10035803	MAIN CONT	RACTOR:	Cache Valle	ey Electric
Crew Start Time:	7:00	Crew Stop Time:	15:30	)	Tot Hrs mns:	8:3 <b>0</b>
FCR Start Time:	6:43	FCR Stop Time:	16:20	)	Tot Hrs mns:	9:37
Use military time format 00:00	·	•		•	•	
-						
WEATHER CONDITIONS:		Sunny, 35 degrees	in AM, Rain, 3	8 degrees	n PM	
DESCRIPTION: (work perform R&R set up four monitors. Newman						
placed a first lift of ABC over the soucrew started taking down the insulat rebar and embeds, and poured 14 c also poured 20 cyds of flow fill on the engineer from an outside consulting CVE Line Crew = 5 CVE Fab Crew	ors, switches, and juyds of concrete. Co west side of Vault firm to review poten	umpers in the 46 kV yard.  norrete was tented to prote #1. I met with Mike Sheph tial issues effecting the pri	CVE fab crew concept the floor from the floor from the floor from the floor fl	mpleted prop he rain, whic ni, an <b>RM</b> P R	ping the west e h started about tisk <b>M</b> anageme	end floor, :14:30. CVE nt rep and ar
IF WORKING IN ENERGIZED S	SUBSTATION:					
Dispatcher login, name and time:	Jim Bowrnan 064	13			<del></del>	
Dispatcher logout, name and time:	Ken Barto 1620					
DISCREPANCIES:	•		IMMEDIATE C	ORRECTIV	E ACTION TA	AKEN:
	<del> </del>					
11/30 - Identified an additional retaining of Demo Plan.	wall that is below grade	e and does not show on the	Will excavate to de	termine dimen	sions.	
12/14 - Communications battery rack ext			Sent email and pict			
indicates that they were told to proceed to 12/15 - Excavated to locate the 46 kV ca			acceptable to RMP Sent e-mail to Roge		ation by Comm G	Group
didn't find them. Will try again. Actual d			cont o mai to reag	<b>511.</b>		
DELAYS OR LOST TIME ENCO	OUNTERED:				•	
EQUIPMENT (working, deliver					-	
CVE fab crew: Portable toilet (2), forklift wash-down structure, trachoe, bobcat, r				crew truck, b	oom truck. Newn	nan: portable
OSHA Pagardahla Safatu Incia	donte			Pono to d	h	
OSHA Recordable Safety Incid	1¢11(2.			Reported	∪y.	Time:



Russ Johnson

PROJECT NAME:		Third We	est Sub - Rebuild		DATE:	Frida	y, January 28	, 2011	
PO & Work Order NO. :	_	3000078	8050 / 10035803		MAIN CONT	RACTOR :	Cache Valle	ey Electric	
Crew Start Time:	7	:00	Crew St	op Time:	16:19	5	Tot Hrs mns:	9:15	
FCR Start Time:	6	:46		op Time:	16:30	)	Tot Hrs mns:	9:44	
Use military time format 00:00	)		-	., .			•		
•									
WEATHER CONDITIONS:			Partly Cloudy, 30	degrees	in AM, Sunny a	ind 40 degr	ees in the PM		
DESCRIPTION: (work perf	orme	d. general	comments. Instru	ctions to	contractor.#	of crew me	mbers onsite		
R&R set up four monitors. CVE line crew continues to dismantle jumpers, insulators, switches, and structural steel in the west 46 kV yard. CVE electrical crew is mounting panels in the new control building. CVE fab crew prepped the center floor area for the switchgear, caulked expansion joints, and cut off the conduits that penetrated the east and west floor sections. Newman loaded out 18 trucks for a total of 144. Newman positioned a trench box in the excavation for the 46 kV vaults.  CVE Line Crew = 5 CVE Fab Crew = 6 Newman = 7 Miller = 6, Geary = 4, R&R = 1, Wilding = 1.									
IF WORKING IN ENERGIZE	D SU	BSTATIO	N:		<u> </u>	<u> </u>			
Dispatcher login, name and time		Manny Luh							
Dispatcher logout, name and tir	ne:	Al Swinski	1630						
DISCREPANCIES:			•		IMMEDIATE C	ORRECTIV	E ACTION TA	AKEN:	
			•					;	
			<del></del>						
11/30 - Identified an additional retain Demo Plan.	ining wa	Il that is tielov	w grade and does not sh	ow on the	Will excavate to de	termine dimer	nsions.		
12/14 - Communications battery rad	ck exten	ds into the no	ortfieast doorway. Capita	al Electric	Sent email and pic	tures to Roger	F to confirm that	this conflict is	
indicates that they were told to prod				ua 9' and	acceotable to RMP Sent e-mail to Rog		ation by Comm C	Grouo	
12/15 - Excavated to locate the 46 didn't find them. Will try again. Act					oon e-maii to Rog	<del>С</del> І Г.			
DELAYS OR LOST TIME E									
								,	
EQUIPMENT (working, del									
CVE fab crew: Portable toilet (2), for wash-down structure, trachoe, bob						, crew truck, b	oom truck. Newr	nan: portable	
OSHA Recordable Safety I	ncide	nts:			<del></del> -	Reported	bv:	 Time:	
CONTRICTOR GALLETY I	, ioiue					l	<del>-1.</del>		
	_								



Russ Johnson



January 25, 2012

Laboratory Code:

RES NA

Subcontract Number: Laboratory Report:

RES 228373-1 None **G**iven

Project # / P.O. #
Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 228373-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 228373-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP January 24, 2012

Analysis Type:

TEM, AHERA

Tumaround:

24 Hour

Date Samples Analyzed:

January 25, 2012

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
		1	(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-012312 SW	EM	855 <b>232</b>	0.0900	911	ND	0.0047	BAS	BAS
3W-012312 NW	EM	855 <b>233</b>	0.0900	911	ND	0.0047	BAS	BAS
3W-012312 NE	EM	855234	0.0900	911	ND	0.0047	BAS	BAS
3W-012312 SE	EM	855 <b>23</b> 5	0.1000	796	ND	0.0048	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

Due	Date:_	1-52.15
	Time:	



RES 228373 1 of ( Page

	Pager : <b>69</b> 3-S09 INVOICE TO: (IF			:NT											co	NTAC	T IM	EOE	MAT	non.	9				
Company: R&R Environmental	Company:			,		Cor	tact.	Đα	-	0.0	ما،	ila	_			MIAO		INFORMATION:  Contect:							
Address: 47 W 9000 5 # 2	Address:					Pho		100	•	1-0	<i>)</i> ~ .	<u>vy</u>	4					Phone:							
Sandy, Ut. 84070						Fax	Fax:											Fax:							
20040 10000						Cel	Cell/pager: 801 541-1035											Cett/pager:							
Project Number and for P.O. #:	<del></del>					Fin	•	la Deli																	
Project Description/Location: 372 West Sub - RMP						$\Box$ _	<u>d</u>	ave	<u>ૄ</u>	<u>v</u>	rev	<u>wir</u>	0.0	سهن					-						
ASBESTOS LABORATORY HOTIRS: Weekdays: 7am - 7pm		Q.3	W 3.	2 .		REQU	EST	ED	AN	ÄĹY	'SIS	-(3)	* * * .	2 1 2		H., (4)	VAI	-ID I	MATE	RIX CO	DES	L	AB NOT	res:	
PLM / PCM (TEM RUSH (Same Day) DE_PRIORITY (Next D	ay)STANDARD	Π						П			П		П				Air =	Α		В	ulk = B				
(Rush PCM = 2hr, TEM = 8hr.)	·	]				lι							11	ŀ		[	)ust :	= D		Pi	aint = P				
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm	<u>ju, Nitarak (486), Serina</u>						ì							ľ			Soil :	- 8		W	ipe = W				
Metalfs) / Dust RUSH 24 hr 3-5 Day	**Prior notification is		၌	1		1 1			1	_			1					: SW	_		= Food	<b></b>			
RCRA 8 / Metals & WeldingRUSH 5 day10 day	required for RUSH	Count	Quant			Scal		1	ı	ig.	1			٤		Drinkin	g Wa				Water = WW				
Fume Scan / TCLP	turnarounds.**	ğ	‡ 💆		ŀ	S	Ì			Quantifica				NOTE			34 =4		0 = 0			<b></b>			
Organics24 hr,3 day5 Day		Point	8 5			Metals				g	] [	<u> </u>		Z Sant		"AS	ME	792	approv	ed wipe	media only**				
MICROBIOLOGY LABORATORY HOURS: Weekdays: 8ain 8 E.coli O157:H7, Coliforms, S.aureus 24 tir 2 Day		占								8	ş,		Ę	or HER NOTES							ļ	ļ			
Salmonella, Listerta, E.coll, APC, Y & M 48 Hr 3-5 D		₹	7402, SO-Ind	SH	<u>.</u>	Fume				*	\$		Ş	P O		İ									
	48 Hr3 Day5 Day	١٤	= _	1 -	Respirable	rte(s) Welding		.	<b>‡</b>	崔	Eg.	<u>o</u>		S OR								<b>—</b>			
"Tumaround limee establish a laboratory priority, subject to laboratory volume and		Į g	Level	7400B,	1 8	¥e de	푸	+	<u></u>	ঠি		<u>.</u>	В	Mentil WLS			ì		ĺ			<b>-</b>			
apply for afterhours, weekends and holklays.**	a dia line Grana iranga Artaritaria assa	Įξ	\$₹			<u>_</u> € 9.	뿔	أقا	57:H7:	, la		*  +		. E		Ě		, o				71.14	·		
Special Instructions:	<u> Meri Tuguk wan besasi Aliaba Meri 200 - Tubu</u>	F Sport	AHERA,	7400A	Total,	<u>*</u> p	ဗွ်		وٰ ۃ	i 0	[ ]	E 8	<u>.</u>	¥   8		ōa	900	Ē				EM N.		(Laboratory	
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Client sample ID immber (Sample ID's must be uniq	ua) James (j. 1916)	Ę		₫	PUST	META	ORGANICS - METH	lo I	<u> </u>	IICRO		Ö (ø	- 1	≥ ₹		Sample (L) / Are	Matrix	# Containers		llected n/dd/yy	Collected				
1 3W 012312SW	<b>30)</b> / 10   10   10   10   10   10   10   10	1	X	1	-	<u> </u>	۲	+	<u></u>	T			<del>'</del>	٠,		911	A	+	<del>  - 7 -</del>	3/12	- mummer	25	<del></del>	232	
2 3W 012312 MW		-	1	1.17	77				•	+	-	+		.	543	911	肯		0110	<u> </u>	Friedrich	1		33	
3 3W-012312 NE	<u> </u>	╁		+ -			+	+		+		+	+-	4	300.74	911	++		-	1		<del>                                     </del>	<del>                                     </del>		
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# **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

# Structure Types

An =	Amosite Anthophyllite Chrysotile	$\mathbf{C} = \mathbf{C}$	Fiber Bundle Cluster
Cr =	- Crocidolite	M =	Matrix
<b>T</b> =	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

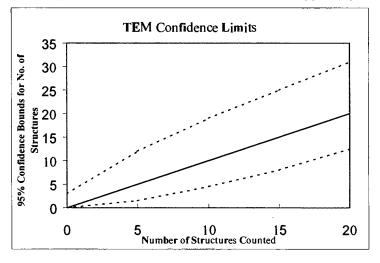
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

## TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

#### Reservoirs Environmental, Inc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385_
Secondary Filter Area (rnm2)	
QA Tyce	

Client :	Rank
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	911
Date received by tab	1/24/12
Lab Job Number:	228373
Lab Sample Number:	855232

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary litter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	1/25/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	70
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grld	Grid Opening	Structure	No of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Cita Opening	Туре	Primary	Total	Length	Width.	1 1	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	63-4	ND					_^_			· · · · · <u>-</u> ·				•
	F3-4	ND		:		Pms	$\downarrow$	70% int	int		3-5%	ppro		•
	E3-4	ND				200	3	60 % in	In f		3-5- of de	ans		
	C3-4	M				, (		1						L
	E3-3	5						1B 1/25	12					
B	H34	ND		-		<u>.</u>		7/				;		
	173-4	W												
	F3-1	M												
	E3-1	ND												
						1.								

#### Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	• 4
QA Type	

I Piet Vangatos Off	actare Count
Client :	Rark
Sample Type (A≂Air, D≂Dusi):	A
Air volume (L) or dust area (cm2)	911
Date received by lab	1/24/12
Lab Job Number:	228373
Lab Sample Number:	855233

Analyzed by	JB
Analysis date	1/25/12
Method (D=Direct, l=Indirect, 1A=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Fraction ot primary filter used	1		
Total Resuspension Volume (ml)			
Volume Applied to secondary filler (ml)		٠.	

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	identification	Mineral Class		•		1 = y	es, blank	≈ no
		Туре	Primary	Total	Length	Width		Amphibole	· c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	£4-3	ND								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	C4-6	ND			2	لح ما		o hours	n f		50/s de bu	5		
	134-6	WD			122	01	3	D Lonh	nĚ	•	% de su	k		
	E5-1	ND												
	C5-4	MD						16		/				
B	184-6	M						40	125/	2				
	HU-6	ND							1_/					
	64-6	MD												
	F4-6	ND												

Page	1	of	

Reservoirs	Environmental, 1no.
TEM Asbes	tos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	too Kv
Magnification .	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Sacondary Filter Area (mm2)	
QA Type	

7211713503103 0111	acture count
Citent :	Rank
Sample Type (A≃Air, O≃Dust):	A
Air volume (L) or dust area (cm2)	911
Date received by lab	1/24/12
Lab Job Number:	228373
Lab Sampte Number:	855234
<del>-</del>	

Car Carrie (turnact)	<del></del>
F-Factor Calculation (Indirect Pre	eps Only):
Frection of primery titter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis dale	1/25/12
Method (D=D\reet, \=\indirect,  -\indirect,	D
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	≠ no
		Tybe	Primary	Total	Length	Wklth		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-1	NO												
	F4-1	ND			Pm	b A	60	Their for	4		- 7 /g de	hus	· .	
	E4-1	ND			Pnc	P	9	Lunder	1		5-7% de	V		
	C4-1	WD			1				./					
	B4-1	ND						19	5	1/2	5/12			
B	H3-1	ND								/	1			
	63-1	ND						/						
	F3-1	NO												
	F3-1	ND												

# Reservoirs Environmental, 1nc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

/ LIVI Madeatoa Ott	actare Count
Cilent:	Rack
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	796
Date received by lab	1/24/12
Lab Job Number:	228373
Lab Sample Number:	855235

Analyzed by	JB
Analysis date	1/25/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	
Counting rules (ISO, AHERA, ASTM)	Att
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pre	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of Str	No. of Structures		nsions	Identification	Mineral Class			1 = ves, blank = no			
Gija	Grid Opening	Туре	Primary	Total	Length	Width	identinoation	Amphilioie	C	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H4-6	ND												· ,
	614-6	ND												
	F4-6	UN			P	10°	70%	inhut		5-7	La debus			
	65-6	ND			P	0	90%	aturt	2	7	he de bus			
	F5-6	W				1								
B	H5-3	ND											<u> </u>	
	65-3	ND.			<u> </u>									
	F5-3	ND												
	F.5-3	ND												
	C5-3	M												

#### Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff Filter Area (mm}^2)}{\text{A verage GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



January 26, 2012

Laboratory Code: Subcontract Number:

RES NA

Laboratory Report: Project # / P.O. #

RES 228454-1 None **G**iven

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 228454-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except In full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 228 454-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

January 25, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

January 26, 2012

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-012412 SW	EM	855777	0.0800	974	ND	0.0049	BAS	BAS	
3W-012412 NW	EM	855778	0.0800	968	ND	0.0050	BAS	BAS	
3W-012412 NE	EM	855779	0.0800	966	ND	0.0050	BAS	BAS	
3W-012412 SE	EM	855780	0.0800	963	ND	0.0050	BAS	BAS	

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

Due	Date:	(·2012
Due	Time:	250-



Page	1	of	1

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Address: 41 W 9000 S	Address:								Contact Dave Keskelly Prone:								Phone						
Sandy W. 8-6070			Fax:								Fox:												
						Col	/page	· %	) [	<i>5</i> મ	1-1	03	<del>,</del>				Coll/pa	igor.					
Project Number and/or P. 0. #;						Fin	- 3		_		i Addre											-	
Project Description/Location: 33 West Sub - RMP							<u> </u>	اناك	<u>@</u>	<u> </u>	em	iro,	مده										
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Fulle Scall / IOEF	turnarounds.**	13	₹ §			Scar	Ì			3			3 8				= Other						
Organics 24 hr 3 day 5 Day		Point Count	ISO, 4/. rect Props	1		Meta/s				Quantification	5	_	antification NOTES		"AST	M E	792 ap	provot wi	po modi:	a only**			
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm		] -	ISO,			Ž		1		اچا	Quantification	윓	9 2	Γ			T	_					
,	3-5 Day	8	7402, ISO-India	OSHA		Fume,						x Quantification	8 6										
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Mold RUSH24 Hr	48 Hr 3 Day 5 Day	12	RA, Level Micro-vac,	7400B,	Respirable	® \$	۱_		÷	Count: +/-	∄   ই	<u>ہ</u> [مَ	E 5	- 1									
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434-012412 SE			V						T						963	I					,	y	84
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NOTE: REI will analyze incoming samples based upon information received and will not be r analysis as indicated on this Chain of Custody sholl constitute an onalytical services agreem	esponaible for errors or omissions in o	alcula	tions res	sulting f	from t	the inacc	uracy orms (	of orig	inal d suft in	ata. B	y⁺sigal % mor	thly in	t/compa Trest-sur	ny repri chargo.	sontativ	e agre	es that	submlasio	of the fo	ollowing sam	nptos for re	quested	
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Laboratory Use Only Received By: Dai	te/Time: (-25-12	ھ	يتخر	54	<u>_</u>	-Carrie	r, ±	``.	<u>, ez</u>	5					Ter	m <b>p.</b> (	F*) _		Yes / I	No Ye	s/No	Yes	/No
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Contact Profile Email Fax Date	Time Init	ials	C	ontact	t			Pho	ne l	mai	Fax				Date				lime		Initi	als	

## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

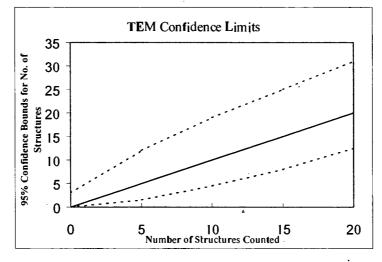
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

### Reservoirs Environmental, Ing. TEM Asbestos Structure Count

Laboratory name:	REI .
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm/2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	Rak
Samole Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	974
Date received by lab	1/25/12
Lab Job Number:	228454
Lab Sample Number:	855777

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary fitter used						
Total Resuspension Volume (ml)						
Volume Applied to secondary tilter (ml)						

Analyzed by	JB
Analysis date	1/26/12
Method (O=Oirect, I=Indirect, IA=indirect, ashed)	D .
Counting rules	. 41
(ISO, AHERA, ASTM)	- Mt.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	140-111-01-1				1 = yes, blank = no		
		Туре	Primary	Total	Lenoth	Width		Amohiboie	. с	NAM	Sketch/Comments	Sketch	Photo	EDS
·A	H4-6	NO					: •				٠.			
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;	F4-6.	W			Pin	0 1	7	2 / in hant	-	3-5	Lo debus			
	E4-6	MD						,	1					
13	63-6	ND		· :		,		13	1/2	o/ie				
	F3-6	W						/ '		/				·
	H43	WD.										·		
	614-3	. WD.		·										
												-		

#### Reservoirs Environmental, Ing: TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX /R) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primaty filter area (mm2)	385
Secondary Filter Area (mm2)	
OA Type	

Rak
A
968
1/25/12:
228454
855778

F-Factor Calculation (Indirect Pre	ps Only):
Fraction of primary filter used	
Total Rssuspension Vokuma (ml)	
Voltane Applied to secondary filter (ml)	
· · · · · · · · · · · · · · · · · · ·	

Analyzed by	JB
Analysis date	1/20/12
Method (D=Oirect, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grkl	Grid Opening	Structure	No. of Str	uctures	Dimer	sions	Identification	Mineral Class	·	•		1 = y	es, blank	= no
·· , • , ·· ·		Туре	Primary	Total	Length	Width		Amphibole	. С	NAM	Sketch/Comments	Sketch	Photo	EDS
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	154-1	ND:					· A	80 / is	Im	· /	3-5%	bis		
	144-1	ND.				0	10B	60%	Fire	<u> </u>	3-5% des	ars.	·	
	614-1.	ND								6				
· B	K3-3	ND		· *; .					1	B.	1/26/12			
	43-3	ND_									<i>₹.∀</i> :			
	(43-3	MD.												
	617-3	NO.		•	•									
										7.7				

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument .	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Maanificatton	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Rak
A
966
1/25/12
228454
855779

Analyzed by	JB
Analysis date	1/20/12
Method (D=Direct, I=Indirect, tA=Indirect ashed)	D
Counting rules 0SO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter usad							
Total Resuspension Volume (ml)							
Volume Applied to secondary filter (ml)							

Grid Grid Oper	Grid Opening	Structure	No. of Structures			rsions	Identification	Mineral Class		•		1 = y	es, blank	= no
	J	Туре	Primary	Total	Length	Width	, ,	Amphibole	c	NÀM	Sketch/Comments	Sketch	Photo	EOS
A	K3-60	ND					: •							
,	H3-6	ND:			Di	A	50	Lon hur		5%	debris			
:	(13-6.	M)			P	p T	Ø °	lo intant		5%	debris		:	L
	F3-6	ND						: · · // .						
· B	672-6	Niz		•				AB Jold	12			•		
	F2-10	ND						X .						
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	F1-6	ND.												
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Reservoirs Environmental, Inc.	
<b>TEM Asbestos Structure Count</b>	

Laboratory name:	REI
Instrument	JEOL 100 CX /N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	Rol
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	963
Date received by lab	1/25/12
Lab Job Number:	228454
Lab Sample Number:	855780

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (ml)						
Volume Applied to secondary filter (ml)		•	····			

Analyzed by	J13
Analysis date	1/26/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dimensions		D:		Dimensions 1		Dimensions 1						Dimensions 1		l n:		Identification	Mineral Class	· ·	,		1 = y	es, blank	= no
-		Туре	Primary	Total	Length	Width		Amphibole	C_	NÀM	Sketch/Comments	Sketch	Photo	EDS														
A	K4-1.	. ND					: •				•																	
i	144-1	ND				$\bigcirc$	b di	80%	m-		8-5% Jehr	رى:																
	614-1.	ND.				Pin	· 2:	90%oinf	mt		B-5% deb	<u>رن ر</u>																
· 	F4-1	ND										,																
B	H3-6.	ND		**:					13:	1/20/1			·															
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### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



January 27, 2012 .

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 228518-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 228518-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE 1. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 228518-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

Analysis Type:

January 26, 2012

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

January 27, 2012

Client ID Number	Lab ID Number		Analyzed Volume		Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-012512 SW	EM	856104	0.0900	907	ND	0.0047	BAS	BAS	
3W-012512 NW	EM	856105	0.0900	907	ND	0.0047	BAS	BAS	
3W-012512 NE	EM	856106	0.0900	907	ND	0.0047	BAS	BAS	
3W-012512 SE	EM	856107	0.0900	907	ND	0.0047	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.010 Effective Filter Area = 385 sq mm

DATA QA

Due Date:_	1.2712
Due Time:	23Se

# REILAB RESERVOIRS ENVIRONMENT: al, INC. 5001 Logan St. Denver, CO 30216 • Pt: 385 904 • 1885 • Fax 303 • 477 • 4276 • Toll Free : 686 RESI-ENY

Page 1 of \_\_\_\_

Pagsr : 883-809-2088 INVOICE TO: (IF DIFFERENT) CONTACT INFORMATION: tunnmenta Phona: Fav Call/pagar: rojoet Number end/or P.O. #: Project Description/Location: 35 West SUD - RMD ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm REQUESTED ANALYSIS **VALID MATRIX CODES** LAB NOTES: PLM / PCM / TEM RUSH (Same Day) PRIORITY (Next Day) STANDARD Alr = A Bulk = B (Rush PCM = 2hr, TEM = 6tir.) Dust = 0 Paint = P CHEMISTRY LABORATORY HOURS: Weekdays: Sam - 5pm Soll = S Wipe = W Metal(E) / Dust \_\_\_ RUSH \_\_\_ 24 hr. \_\_\_3-5 Day Swab = SW F = Food Quant \*\*Prior notification is RCRA B / Setals & Welding Drinking Water = DW | Wasio Water = WW Point Count required for RU5H RUSH \_\_\_ S day \_\_\_10 day Fume Scan / TCLP ISO, +/-. ( O = Other tumarounds.\*\* Organics \*\*ASTM E1792 spproved wipe niedia only\*\* 24 hr. \_\_\_ 3 day \_\_\_5 Day MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm E.coll Q157:H7, Coliforms, S.aureus \_\_\_ 24 hr. \_\_\_ 2 Day OSHA Salmonella, Listeria, E.coli, APC, Y & M \_\_ 3-5 Day \_\_\_ 48 Hr. I - AHERA, Level II, Il-quant, Micro-vac, 1º Mold RU5H\_ 24 Hr 48 Hr \_\_ S Day \*\*Turnaround timaa aatabilah a faboratory priority, aubject to laboratory voluma and ero not guarahtaod. Additional toes apply for aftertiours, weekanda and holidaya.\*\* Matrix Code Special Instructions: (L) / Arreo EM Number (Laboratory Date Time Use Only) Collected Callected Client sample ID number (Sample ID's must be unique) MICROBIOLOGY hivmm a/p 407 01 25/12 3W-0125125W 856184 4 Ø6 *\$*07 10 Number of samples received: (Additional samples shall be listed on attached long form.) NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuriaty of griginal data. By signing diant/company rapresentative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an applytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may retaining a 1.5% monthly interest surcharge. Relinquished By: Date/Time: D L On ice Sample Condition: Seeled Intact Laboratory Use Only Temp. (F°) Yes / No Yes / No Yes / No 126/2 835 Recolvad By: Date/Time: Carrier: Results: Contact Phono Email Fax Date Time Initials Contact Phone Email Fax Date Time initials Contact Phono Email Fax Date T)me Initials Contact Phone Email Fax Date Time Initials

12011\_version 1

## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

# Asbestos Type

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

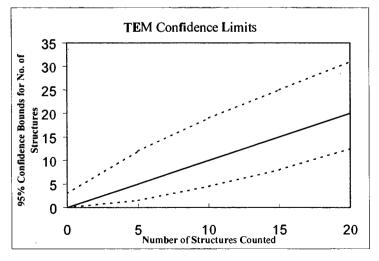
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

	T
Laboratory name:	REI
instrument	JEOL 100 CX N 6
Volta <u>ae (</u> KV)	100 KV
Magnification	20KX 10KX
Grid opening area (n\m2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.0% um
Primary filter area (mm2)	385
Segondary Fitter Area (mm2)	
QA Typo	

Client :	Rak
Samole Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	907
Date received by tab	1/26/12
Lab Job Number:	228518
Lab Sample Number:	856104

F-Factor Calculation (Indirect Pre	eps Oniy):
Fraction of primary litter used	
Total Resuspansion Volume (ml)	
Volume Applied to eccondary filter (ml)	

Analyzed by	JB
Analysis date	1/27/12
Method (O=Direct, I=Indirect,	T)
IA=Indirect, ashed) Counting rules	<u> </u>
(ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Grid Opening		No. of St	ructures	Dime	nsions	Identification	Mineral Ctass	· · · · ·			1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	K4-1	ND												•
	144-1	ND:			1	دمه	A	50% - 1 h	6	3-	52/o debri	5		
:	64-1	ND			+	90	B -	To % nhu	4	3-	blodebn,			
	C4-1	ND									,			
	B4-1.	NO						1		7/12				
<u>B</u>	62-1	ND		·									,	
	FZ-1	ND			· .									
	E2-1	ND.												
	CZ-1	20						٠.						
												·		

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
OA Tyoe	

RAR
A
907
1/26/12.
228518
856105

Fraction of primary fitter used	
Total Resuspension Volume (ml)	 
Volume Applied to secondary filter (ml)	 <del></del>

Analyzed by	JB				
Analysis date	1/27/12				
Method (D=Direct, t=Indirect, tA=Indirect, ashed)	D'				
Counting rules (ISO, AHERA, ASTM)	AH				
Grid storage location	Month Analyzed				
Scope Alignment	Date Analyzed				

	Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class				1 = ves, blank = no		
				Primary	Total	Length	Width	4.	Antphibole	С	NÀM_	Sketch/Comments	Sketch	Photo	EDS
	A	14-1	ND									٠.			
	•	K4-1	ND:			ρ.	<i>ω</i> Δ	A 80	They for	+	. 3	50/2 nbh	رج :		
	:	H4-1	ND			R	ν.: Ω.:	B . 7	O'han hut		3-	1 7 7 7	15		
		6141	2												
		F4-1.	CIN		·;				11						·
	B	H4-4	ND						13.1/2	7/12					
		69-4	NO.							/					
		F4-4	20												
		E4-4.	ND												
															.01

Page 1 of \_\_\_\_\_

Laboratory name:	REI
Instrument	JEOL 100 CX/N 6
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary filtar area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	Roll
Samole Type (A≠Alr, D≖Dust):	A
Ait volume (L) or dust area (cm2)	907
Date received by lab	1/26/12
Lab Job Numben	228518
Lab Sample Number:	856106

Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Analyzed by	5B
Analysis date	1/27/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	T D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Si	ructures	Dime	nsions	Identification	Mineral Class	· ·	· 		1 = y	es, blank	≖ No
	One Opening	Туре	Primary	Total	Length	Wkith		Amphibole	С	NÀM	Sketch/Comments	Sketch	Photo	EDS
A	14.3	M					: •							
	K4-3	ND:			· .	20	A	70 hoinh	nt	3	-5% Jeb	115°		
:	H4-3	NO				Dr.	B	80% inh	f	3	5 % deby	17		
·	614-3	ND												
	F-4-3.	ND												
3	F3-6	ND						1. 13	1/2	7/12				
	E3-6	ND						/		7				
	C3-6	ND.										٠,		
	B3-6	ND												
·		, .			1	1				1				

Laboratory name:	REI
Instrument	JEOL 100 CX/N 6
Voltage (KV)	100 KV
Magnification	20100 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0,28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	Roll
Sample Tyoe (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	907
Date received by tab	1/26/12
Lab Job Numben	228518
Lab Sample Number:	856106

F-Factor Calculation (Indirect Pre	ps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Voluma Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	1/27/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D'
Counting rules (ISO, AHERA, ASTM)	Att.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

	<del></del>	·		<del></del>	<del></del>			<del></del>	<del></del> -			<del></del>			
Grid	Grkl Opening	Structure	No. of Structures		Dimensions		Identification	Mineral Class					1 = yes, blank = no		
		Туре	Primary	Total	Length	Wkith		Amphibole	· c	NAM	Sketch/Comments	Sketch	Photo	EDS	
A	143	M													
	44-3	ND:			·	$Q_{\alpha\dot{\alpha}}$	Å	70% inh	int	3	-5% Jeb	15:			
	H4 3.	NO				) r	B	80% inh	rf	3	5 % deby	17			
. 	614-3	ND													
	F-4-3.	ND					<u> </u>						,		
3	F3-4	MD						1.18	1/2	7/12					
	E3-6	ND.						/. / .	/	7					
	C3-6	ND.		,											
	B3-6.	ND													

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



January 30, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 228612-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 228612-1 is the job number assigned to this study. This report Is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 228612-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

January 27, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

January 28, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter	
D Number	ID Number		Analyzed Volun Sample		Asbestos Structures Detected	Sensitivity	Concentration	Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-012612 SW	EM	85 <b>6</b> 811	0.1000	511	1	0.0075	0.0075	10.0	
3W-012612 NW	EM	85 <b>6</b> 812	0.1000	5 <b>2</b> 9	ND	0.0073	BAS	BAS	
3W-012612 NE	EM	85 <b>6</b> 813	0.1000	5 <b>2</b> 7	1	0.0073	Ô.0073	10,0	
3W-012612 SE	EM	856814	0.1000	500	ND	0.0077	BAS	BAS	

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

RES 228612-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

January 27, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

January 28, 2012

Client ID Number	Lab ID Number		Asbestos Mineral	Ast	estos Stri	ucture Typ	pes*	Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for	
			•	Fibers	Bundles	Clusters	Matrices	_		Concentration	
3W-012612 SW	EM	856811	Chrysotile	1	0	0	0	0	0	1	
3W-012612 NW	EM	856812	ND	0	0	0	0	0	0	. 0	
3W-012612 NE	EM	856813	Chrysotile	1	0	0	0	0	0	1	
3W-012612 SE	EM	856814	ND	0	0	0	0	0	0	0	

<sup>\*</sup>See Analytical Procedure for definitions

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due	Date:_	1-28-12
Due	Time:_	2542



300 m			
Page	1	of	1

5801 Logan St. Danver, CO 80216 - Ph; 303 968-1 M6 - Fax 303-477-4276 - Toll Floe :856 RESI-ENV Pagar: 303-509-2098 CONTACT INFORMATION: INVOICE TO: (IF DIFFERENT) Company: K & K Eustenmenter Divisi Korkeller יחחעי 2000 5 7Z Faxc List SHOTA Coll/pager. Coll/pagor 80 (541-1035 Final Data Dolivers bio Email Addrsss. Protect Number end/or P.O #: Project Description/Location: 3= WEST Sub - KND devel new ro-ion REQUESTED ANALYSIS VALID MATRIX CODES LAB NOTES: ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm PLM / PCM /(TÈM) RUSH (Same Day) PRIDRITY (Next Day) STANDARD Bulk = B Air = A (Rush PCM = 2hr. TEM = 6hr.) Dust = 0 Paint = P CHEMISTRY LABORATORY HOURS: Weekdays: Sam - Spm Soil = S Wipe = W F = Food RUSH 24 hr. 3-5 Day Swab = SW Metal(s) / Dust Quant, Prior notification is Drinking Water = DW Waste Water = WW RCRA 8 / Metals & Welding Point Count RUSH 5 day \_\_\_10 day regulred for RUSH Fume Scan / TCLP O = Other ISO. +/-. tumerounds.\*\* "ASTM E1792 approved wipe media only" Organics 24 hr. \_\_\_ 3 day \_\_\_\$ Day MICROBIOLOGY LABORATORY HOURS; Weekdays; 9am - 6pm - AHERA, Level II, 7402. AETALS - Analyte(s) ICRA 9, TCLP, Welding Fume, E.coli 0157:H7, Coliforms, Saureus \_\_\_ 24 hr. \_\_\_\_2 Day 3-S Day Salmonella, Listeria, E.coli, APC, Y & M 48 Hr. 3-\$ Day RUSH 24 Hr 48 Hr 3 Day 5 Day Mold ∞I 0157:H7: Turnaround times establish a laboratory priority, subject to laboratory volume and any not quaranteed. Additional fees apply for afterhours, weekends and helidays." Containers Matrix Code Special Instructions: EM Number (Laboxatory Date Time Usa Only) Collected Collected Client sample ID number MICROBIOLOGY (Sample ID's must be unique) ስከ/mm a/p mm/ddfvv 856811 529 12 13 5-0176 6 7 8 9 10 Number of samples received: (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based-upon-information received and will not be responsible for errors or emissions in colculations resulting from the inaccuracy of original Care—Be signing client/eempany representative agrees that submission of the following semples for requested analysis as indicated on this Chapty of Custody shall constitute an analysical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge. Relinquished By: Date/Time: Sample Condition: On Ice Sealed Intact Cos/No Laboratory Use Only Temp. (F°) Yes / No Yes / No @ ESSLE Carrier. Received By Date/Time: Results: Contact () (Phone Email Fax Date 122/12 Time ila Initials WC Contact Phone Email Fax Initials Date Phone Email Fax Phone Email Fax Date Time Initials Contact Date Time Initials Contact

> 5249 4:7531 7-2011\_version 1

#### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	<b>M</b> =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

## Sizing Conversion 1 length unit = 5 mm on screen = 0.278 micron

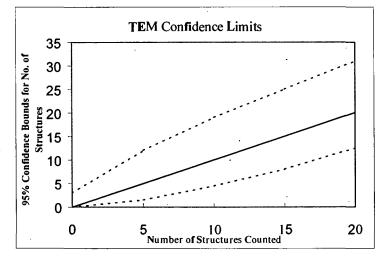
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	ŔEI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 11. =	0.28 um
Scale: 1D =	0.0\$6 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

TEM ASDESIOS OF TOTAL COURT				
Client :	R+R.			
Sample Type (A=Air, I)=Dusf):	A			
Air volume (L) or dust area (cm2)	511			
Date received by lab	1/27/12			
Lab Job Numben	228612			
Lab Sample Number	856811			

Scope Alignment	Date Analyzed
Grid storage location	Month Analyzed
Counting rules (ISO, AHERA, ASTM)	A-H
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Analysis date	1/27/12
Anetyzed by	M

F-Factor Calculation (indirect Preps Only):				
Fraction of princip filter used				
Total Resuspension Volume (ml)				
Volume Applied to secondary filter (ml)				

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
- Sind	Gird Opening	Туре	Primary	Total	Length	Width	identification	Amphibole	C	NAM	Sketch/Comments	Sketch	Photo	EOS
A	. 614-1	M)									٠.			
	F4-1	F		(	2	<b>t</b>	CP.							
	84-1	(K)				, , , , , , , , , , , , , , , , , , ,								
	W-1	100			.,	low	y A 90	1. Instact -	5%	lebri	ذ			
	24-1	M				Pre	B 607	. NUTCA	152	بالضائر	no Jan	× /	27/	12
<i>5</i>	K5-3	W.												
	45-3	m.									·			
	H4-1	. M)						·						
	94-1	N)												
	P4-3	M												

	T
Laboratory name:	REI
Instrument	JEOL 100 CX N (S
matterizerit .	3202 100 0X 14 10
Voltage (KV)	100 KV
Magnification	20KX iOKX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RXR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	529
Date received by lab	1/27/12
Lab Job Number	228612
Lab Sample Number.	856812

F-Faetor Calculation (Indirect Preps Only):				
Fraction of primary filter used				
Total Resuspension Volume (mi)				
Volume Applied to secondary filler (ml)				

	<del>-</del>
Analyzed by	M
Analysis date	1/27/12
Method (D=Direct, 1=Indirect, IA=Indirect ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH.
Grld storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening Structure		No. of Structures		Dimensions		Identification	Mineral Ctass			1 = ves, blank = no		= no	
. 5		Туре	Prirnary	Total_	Length	Width		Amphibole	· c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	44-3	NO					: •				٠٠,			
,	443	(CV)				Prex	A 902	war.	<del>i</del> 7,	Labi	-3			
,	F1-3	3				Cres	P 60	inhas J	1.1	ebry				
	243	2		• 1	"			Jan 18	<u></u>	1/27	112			
	c4-3	M		•;						,				
B	64-4	W.												
	FY-Y	M).									• /			
	84-4	M					·					:		
	14-3	W												
	KM-3	M				1.77								,

JEOL 100 CX N (S
100 (//
20KX 10KX
0.01
0.28 um
0.056 um
385

Client:	RHR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	527
Date received by lab	1/27/12
Lab Job Number:	228612
Lab Sample Numben	856813

F-Factor Calculation (Indirect Pre	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	W
Analysis date	1/27/12
Method (D=Direct, i=Indirect, IA=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	AH.
Grid storage location	. Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Opening Structure		ructures	Dime	nsions	Identification	Mineral Class				1 = v	es, blank	= no
	Cite opening	Туре	Primary	Total	Length	Width		Amphibole	. с	. NAM	Sketcti/Comments	Sketch	Photo	EOS
A	- तुउ-५	<del>1</del> 2												·
	63-4	N)							•					
;	F3-4	<u>.</u>		(	2.	\	(ND)		1		$\hat{\sigma}_{i}$			
	E3-14	M		, , .		Pricy	A 201.	interes -5	7. Le	bus				
	C3-4.	M		•;		Pres	BNA	Angle		1/281	n			
15	93-1	M			·					/				•
<u> </u>	F3-1	m.												
	23.1	. M												
	F4-6	M			·									
	E4-6	M				÷						:		

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	,
OA Type	

Client :	RHR
Samole Type (A=Air, D≃Dust):	A
Air volume (L) or dust area (cm2)	500
Date received by lab	1/27/12
Lab Job Number:	228612
Lab Sampla Number:	856814

Analyzed by	M
Analysis date	1/27/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Votuma Applied to secondary filter (mi)	

Grid	Grid Opening	Stricture			res Dimensions		Identification	Mineral Class				1 = yes, blank = no		= no
		Туре	Primary	Total	Length	Width		Amphibole	Ċ	NAM	Sketch/Comments	Sketch	Photo	EDS
A	15-)	100												•
	K5-1	2				Pres	A 90'L	intact -5	Z. d	bris				
	H5-1	W				Pres	B.A	Anti.	~	1201	12			
	45-1	· M			•					7				
	P5-1	M		•										
6	H5-3	N				·								
	65-3	<b>(</b> W)					<u> </u>							•
	PS-3	. W												
	45.3	ND												
	C5-4	M												

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity pf the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (rtun}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{1000cc}$ 

Filter loading,  $s/mm^2 = \frac{\# Asbestos structures}{Area Analyzed (mm^2)}$ 

GO = TEM grid opening



January 31, 2012

Laboratory Code:

RES NA

Subcontract Number: Laboratory Report: Project # / P.O. #

RES 228714-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 228714-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 228714-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

Analysis Type:

January 30, 2012

Tumaround:

TEM, AHERA

24 Hour

Date Samples Analyzed:

January 31, 2012

Client ID Number	Lab ID No	umber	Area Ai Analyzed Volume Sampled		Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-012712 SW	EM	85 <b>7443</b>	0.0900	900	4	0.0048	0.0190	44.4	
3W-012712 NW	EM	857444	0.0900	898	ND	0.0048	BAS	BAS	
3W-012712 NE	EM	857445	0.0900	898	ND	0.0048	BAS	BAS	
3W-012712 SE	EM	857446	0.0900	896	ND	0.0048	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.010 Effective Filter Area = 385 sq mm

DATA QA

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 228714-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

January 30, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

January 31, 2012

Client	Lab		Asbestos					Structures	**Excluded	Asbestos
ID Number	ımber ID Number Mineral Asbestos Structure Typ					es*	>5 Microns in Length	Structures	Structures for	
			•	Fibers I	Bundles	Clusters	Matrices			Concentration
3W-012712 SW	EM	857443	Chrysotile	2	0	2	0	0	0	4
3W-012712 NW	EM	857444	ND	. 0	0	0	0	0	. 0	0
3W-012712 NE	EM	857445	ND	0	0	0	0	0	0	0
3W-012712 SF	EM	857446	ND	0	0	0	0	0	0	0

<sup>\*</sup>See Analytical Procedure for definitions

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to incorrect aspect ratio

ND = None Detected

Due Date: 1-31-12 Due Time: 945.

# S661 Logan SI. Denver, CD 80218 • Ph; 303 984-1986 • Fax 303 477-4275 • Toli Free :866 RESI-ENV

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Page	1	_of_	<u>t</u>	

	Pager: 303-50																	ATION.				
Company: D & () Faciona de Au	INVOICE TO: (IF	DIF	FERE	NI)	_	lCo.	ntact:	_	_	0.	1	110		CONI	ACI		ORM.	ATION:				
Adress: 47 W 9000 S #2	Address:						Contact Dave Roskelly Phons:						Phone:									
Sandy Wt. 84070							Fax:						1	Fax								
Janes Wr. 840 R	<del></del>		<u> </u>			- 1	Cell/pager: \$71 5H(-W35						alVpago	or:								
Project Number and/or P.D. #:								a Delivi								_						
Project Dosoription/Locacon: 3 West Sub-RMP						1	de	we	e	ne	wi	70.0	Sopon .									
ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		T				REQU					=			T		/A1 /	) MA	TRIX C	ODES	] []	B NOTE	-2-
PLM / PCM / TEM) RUSH (Same Day) K PRIORITY (Next Da		1-	Γ	_		1240			1		Ť	<del></del>	1	+-		ir = A			Bulk = B		7	
(Rush PCM = 2hr, TEM = 6hr.)	,,	1		1 '	i		1	1 1		1 1		- 1	1 1	$\vdash$		ıst =		_	Paint = P	<del></del>		
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm		1	ĺ		lΙ		l		1	ll		ļ	1	$\vdash$		oil = S			Vipe = W		13	112-
Metal(s) / Dust RUSH 24 hr 3-5 Day		1	ر ا				İ	11	ı		П					b = 5			= Food			
DODA GLAS ASSES O MENTES	**Prior notification is	[ ਦੂ [	Quant		( (	[-	[ '			퇿		- [	[_[	Drit					Water = WW		<del></del>	
Fume Scan / TCLP RUSH 5 day 10 day	required for RUSH turnsrounds.**	3	J. 8	11	1	Scan	l i		1	3		- 1	景公					Other				
Organics 24 hr 3 day5 Day		Point Count	Page 7. ÷		1 1	Metals			1	Quantification	1.		Quantification ER NOTES	-	ASTM	1 E179	2 appr	oved wipe	media only**			
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6p	m	ا يا	7402, ISO, ISO-Indirect P			₹				ء [د] <u>-</u>	entification	8 8	fcation, Quantificati OR OTHER NOTES									
E.coli O157:H7, Coliforms, S.aureus 24 hr 2 Day	3-5 Day	ğ	25 52 26 52	1 ≨		Analyta(s) CLP, Welding Fume,	·	1		8	튙	활물	5 E	1		i						
Salmonella, Listeria, E.coli, APC, Y & M48 Hr3-5 Day	y	Guo	<u>  ~</u> &	SSTA ATSO	울	17.0				Ŧ   Ę	181	層屬	* S	}								
Mold RUSH24 Hr	_48 Hr3 Day5 Day	្ន	Level II, To-vac, K	7400B,	Respirable	© #	<b> </b>	‡		A G	8	8 8	E 3	1	Ì				)			
"Turnaround times establish a laboratory priority, subject to laboratory volume and a	re not guaranteed. Additional fees	Je Dort		₹	5	\$ ₹	븁	7 5	١.	ပို့ မ	∻	۶ ک	회통	2	ı				İ	<u> </u>		
apply for afterhours, weekends and holidays."		اع		7400A.	호 !	- Amar	2	를 <del>함</del>	7	를 수	100	‡  ن	±   ≅	불	- 1	윤	బ్			1.11	**	
Special Instructions:		Short	TEM - AME Semi-quant,	1 %	- Totel,		ORGANICS - METH	Salmonella: +/ E.cofi 0157;H7:	isteria	robic Plate	Colforns	S.aumeus Y & M:	- E	\ <u>`</u>	8	Matrix Code	Containers	Data	Time	EM Nu	nber (La	iboratory
		🛓	ਾਂ ਨੂੰ ਤੁਵੇ	i	DUST	METALS RCRA 8,	3	38 13	Est	Aer E.o.	3	S X	올로	Ē	₹	ğ	<u>و</u> ا 5	Date ollected	Collected	1	ise Only)	1 1
Client sample ID number (Sample ID's must be unique	o)	3	Semi Semi	20	8	₩ Q	S S		MIC	ROB	OLO	βY	SA	8	_	Σ	* .	nm/dd/yy	hh/mm a/p		<u> </u>	<u> 11 </u>
1 3W 012712 SW			K											190	<b>X</b>	4	Oil	27/12		30	740	F3
2 3W-012712 NW	turi di di					: 1				. :				89	8						2	44
3 3W 012712 NE													L	R	8	П				/	4	25
43W-012712 SE						: -								189	6			1		▼	7 2	6
3/				П				T		$\top$				1		1						
5			· .												- 1		+-		T			
7				$\Box$					П	1					1	_						
8								7.		1				$\top$								
9								1	П	1	11					$\neg$	$\top$					
9 10			- :	П			$\exists$				11			$\top$	-	十		1 10 11				
Number of samples received: (Additio	nal samples shall be listed on a	attac	hed lo	na foi	rm.)			<u>·l</u>	ـــ	<u>l-</u>										·		
NOTE: REI will analyze incoming samples based-upon-information received and will not be reasilysts as indicated on this Cytaly of Custody shall constitute an analytical services agreem	esponsible for errors or omissions in ca	lcula d	ieas resu	ultino fr	rom th	e inaccu	racy o	f ongin	el da	ta. By	signine	dient	company n	epresen	tative :	grees	that sub	onission of	the following sar	nples for rec	uested	
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7-2011\_version 1

#### Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

# Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite Cr = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

f = other structure associated with a matrix

NAM = Non Asbestos Mineral

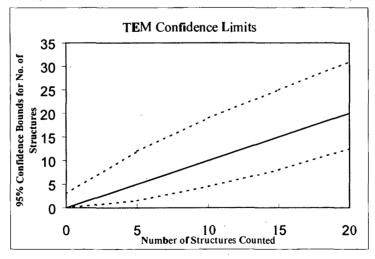
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM\_Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.2S um
Scale: 1D =	0.05 <del>0</del> um
Primary filter area (mrh2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

DOILL GOTHER
ROR
A
900
1/30/12
228714
857443

Analyzed by	JB
Analysis date	13112
Method (D=Olrect, l=Indirect, IA=Indirect, ashed)	775
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pre	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary tilter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	identification	Mineral Class		·		1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	HZ-1	ND							,					· ·
	62-1	F		}	5	1	CD.		V			:		
;	F2-1	ND								,				
	E2-6	MD			4	ns A	50%	whint.	3.5	2 deb	n's			
	F2-6.	M		;	F	np B	20%.	ntonf	3-5	% del	13			
3	K4-1	C		2	4	2	10		1		@* <del>*</del>			
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	·	F		4	2	(	ĊĎ		~		/			
	H4-1	MD												
	64-1	ND.		·									-	

LAB NAM	ИE	R	EI		Lab Job N						Analyzed by:	113				
		.—			Lab Samp	le Number	8574	13			Analysis Date:		3/12	<del></del>		
Grid	Grid	Structure	No. of St	ructures	ructures Dimensions Id		Identification	Mir	neral Clas	ss		1 = y	es, blank	= no		
Und	Opening	Туре	Primary	Total	Length	Width	1donalion	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
13	F4-1	ND		·												
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Laboratory name:	REI
Instaiment	JEOL 100 CX A S
Voitage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primaty filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	Rok
Sample Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	898
Date received by lab	1/30/12.
Lab Job Number:	228714
Lab Sample Numben	857444

F-Factor Calculation (Indirect Pre	ps Only):
Fraction of prinutry litter thed	
Total Reauspension Volume (ml)	
Volume Applied to secondary filter (mi)	

Analyzed by	JB.
Analysis date	1/3/1/2
Method (D=Direct, l=Indirect, tA=Indirect, ashed)	7
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stricture	No. of St	nictures	Dimer	nsions	Identification	Mineral Ctass				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	•	Amohibole	С	NÀM	Skotch/Comments	Sketch	Photo	EDS
A	1+4-4	ND												
	644	ND				$\bigcap_{M}$	0 A. 8	O/on had		3-5	1/2 dehn3		٠.	
,	F4-4	, ZD				Ph	B 90	oho inha	(	3-5	% debris	<u></u>		
	E4-4.	ND							·		-			
	64-4.	ND						11	) (/	31/12	,			
	134-4	Q.				•		. / !		1		· · · · · · · · · · · · · · · · · · ·		
3	614-4	ND												
· .	F4-4	ND												
	E4-4	N.D												

Laboratory name:	REI
1nstrument .	JEOL 100 CX (N S
Voltage (KV)	100 KV
Magnification	2010X 1010X
Grid opening area (mm2)	0.01
Scale: 1L =	0.2S um
Scale: 1D =	0.056 um
Primary filter area (mrn2)	385
Secondary Filter Area (mm2)	
QA Typa	

Rok
A
898
1/30/12
228714
857445

Grid storage location Scooe Alignment	Month Analyzed  Date Analyzed
Crid starme legation	Month Anchored
Counting rules (ISO, AHERA, ASTM)	Lare AH .
tA=Indirect, ashed)	D
Analysis date  Method (D=Direct, l=indirect,	1/31/12
Analyzed by	JB

Fractive of primary filter used		
Total Rasuspension Volume (mi)		
Voluma Applied to secondary filter (ml)	•	

Grid	Grid Opening	Strcture	No. of St	mctures	D mel	sions	Identification	Mineral Class	· .			1 = y	es, blank	<b>=</b> no
J	Sine Oponing	Туре	Primary	Total	Length	Width		Amohibole	. С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K5-4	ND												
	115-4	ND.			Pa	ν. 	100	The in fact		5%	debris			
	(95-4	ND.				0	3 90.	% inhant		5%	debnis	<u> </u>		
	63-3	NO							1		-			
	F3-3	ND		•				·	B	1/3	/12			
13	H3-1	2							<i>!</i> .	1				
	(23-1	WD.												
	F3.1	ND.		•										
	E3-1.	M			·									

	,
Laboratory name:	REI
Instmment	JEOL 100 CX A S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L ≃	0.28 um
Scale: 1D =	0.050 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	•
QA Tyoe	

TEM Madeatos Still	actare constr.
Client:	Rok
Samole T∨oe (A≖Air, D≖Dust):	A
Air volume (L) or dust area (cm2)	896
Date received by lab	1/30/12.
Lab Job Number:	228714
Lab Sample Number:	857446

	T
Analyzed by	1 133
Anaiysis date	1/3/1/2
Method (D=Direct, l=indirect,	112
tA≖indirect, ashed)	
Counting rules	Ail
(ISO, AHERA, ASTM)	FH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (indirect Pre	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Strature	No. of St	mctures	Dime	nsions	Identification	Mineral Class	· · · · · ·			1 = yes, blank = no		
5.10	Ond Opening	Туре	Primary	Total	Length	Width	Committation	Amohibole	С	NÁM	Sketch/Comments	Sketch	Photo	EDS
A	63-3	ND												. · ·.
, . 	F3-3	ND			Pus		90% in	Funt 3	-5%	5 de	V 2v.5			· .
; 	E3-3.	ND			Pn	B	20% of	ant 3-	5%	edek	u S			
15	E3-3	ND.				. :		77 /			. <u>-</u>			
. ' /	B3-3	ND.					4	B 1/31/12		•				
B	K3-4	ND					/.	[ / . / ·						. •
	H3-4	ND.												
	63-4	WD .												
	F3-1	MD									٥			•
					•									

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening